











SHEET 2 OF 5

INFORMATION DISCLOSURE  
CITATION IN AN  
APPLICATION  
(PTO-1449)ATTY. DOCKET NO.  
005917 USA/FET/FETSERIAL NO.  
09/998,372APPLICANT  
Young Joseph PAIKFILING DATE  
November 30, 2001GROUP  
3723

## U.S. PATENT DOCUMENTS

EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE
<del>XX</del>	4,957,605	09/18/90	Hurwitt et al.	—	—	04/17/89
	5,240,552	08/31/93	Yu et al.	—	—	12/11/91
	5,369,544	11/29/94	Mastrangelo	—	—	04/05/93
	5,444,837	08/22/95	Bomans et al.	—	—	12/29/93
	5,665,214	09/09/97	Iturralde	—	—	05/03/95
	5,695,810	12/09/97	Dubin et al.	—	—	11/20/96
	5,824,599	10/20/98	Schacham-Diamond et al.	—	—	01/16/96
	5,825,356	10/20/98	Habib et al.	—	—	03/18/96
	5,831,851	11/03/98	Eastburn et al.	—	—	03/21/95
	5,838,951	11/17/98	Song	—	—	08/28/96
	5,859,777	01/12/99	Yokoyama et al.	—	—	05/13/97
	5,871,805	02/16/99	Lemelson	—	—	04/08/96
	5,943,550	08/24/99	Fulford, Jr. et al.	—	—	03/29/96
	6,012,048	01/04/00	Gustin et al.	—	—	05/30/97
	6,037,664	03/14/00	Zhao et al.	—	—	03/31/98
	6,096,649	08/01/00	Jang	—	—	10/25/99
	6,100,195	08/08/00	Chan et al.	—	—	12/28/98
	6,114,238	09/05/00	Liao	—	—	05/20/98
	6,150,270	11/21/00	Matsuda et al.	—	—	01/07/99
	6,157,864	12/05/00	Schwenke et al.	—	—	05/08/98
	6,181,013 B1	01/30/01	Liu et al.	—	—	03/13/00
	6,212,961 B1	04/10/01	Dvir	—	—	02/11/99
	6,226,563 B1	05/01/01	Lim	—	—	09/04/98
	6,228,280 B1	05/08/01	Li et al.	—	—	05/06/98
	6,237,050 B1	05/22/01	Kim et al.	—	—	09/04/98
	6,259,160 B1	07/10/01	Lopatin et al.	—	—	04/21/99
<del>XX</del>	6,281,127 B1	08/28/01	Shue	—	—	04/15/99
EXAMINER			DATE CONSIDERED			
			11/09/04			

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.



SHEET 3 OF 5

INFORMATION DISCLOSURE  
CITATION IN AN  
APPLICATION  
(PTO-1449)

ATTY. DOCKET NO.  
005917 USA/FET/FET

SERIAL NO.  
09/998,372

APPLICANT  
Young Joseph PAIK

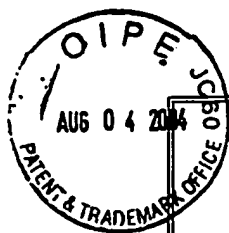
FILING DATE  
November 30, 2001

GROUP  
3723

## U.S. PATENT DOCUMENTS

EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE
<i>BR</i>	6,317,643 B1	11/13/01	Dmochowski			03/31/99
	6,339,727 B1	01/15/02	Ladd			12/21/98
	6,355,559 B1	03/12/02	Havemann et al.			11/03/00
	6,391,780 B1	05/21/02	Shih et al.			08/23/99
	6,417,014 B1	07/09/02	Lam et al.			10/19/99
	6,427,093 B1	07/30/02	Toprac			10/07/99
	6,432,728 B1	08/13/02	Tai et al.			10/16/00
	6,449,524 B1	09/10/02	Miller et al.			01/04/00
	6,455,415 B1	09/24/02	Lopatin et al.			04/16/01
	2002/0165636 A1	11/07/02	Hasan			04/24/02
	6,484,064 B1	11/19/02	Campbell			10/05/99
	6,495,452 B1	12/17/02	Shih			08/18/99
	2002/0193899 A1	12/19/02	Shanmugasundram et al.			05/01/02
	2003/0017256 A1	01/23/03	Shimane			06/12/02
	6,515,368 B1	02/04/03	Lopatin et al.			12/07/01
	6,528,409 B1	03/04/03	Lopatin et al.			04/29/02
	6,537,912 B1	03/25/03	Agarwal			08/25/00
	6,580,958 B1	06/17/03	Takano			11/22/99
	6,605,549 B2	08/12/03	Leu et al.			09/29/01
	6,607,976 B2	08/19/03	Chen et al.			09/25/01
	6,609,946 B1	08/26/03	Tran			07/14/00
	6,624,075 B1	09/23/03	Lopatin et al.			11/05/02
	6,630,741 B1	10/07/03	Lopatin et al.			12/07/01
	6,660,633 B1	12/09/03	Lopatin et al.			02/26/02
	6,708,074 B1	03/16/04	Chi et al.			08/11/00
<i>BR</i>	6,708,075 B2	03/16/04	Sonderman et al.			11/16/01
<i>BR</i>	6,728,587 B2	04/27/04	Goldman et al.			12/27/00
EXAMINER <i>[Signature]</i>				DATE CONSIDERED <i>11/09/04</i>		

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.



INFORMATION DISCLOSURE  
CITATION IN AN  
APPLICATION  
(PTO-1449)

ATTY. DOCKET NO.  
005917 USA/FET/FET

SERIAL NO.  
09/998,372

APPLICANT  
Young Joseph PAIK

FILING DATE  
November 30, 2001

GROUP  
3723

## FOREIGN PATENT DOCUMENTS

EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
						Yes	No
BR	EP 0 932 195 A1	07/28/99	EP			X	
BR	EP 1 083 470 A2	03/14/01	EP			X	
BR	GB 2 365 215 A	02/13/02	GB			X	

## OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

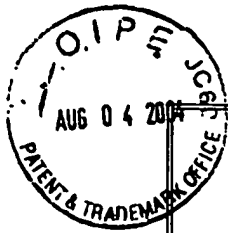
BR	Sun, S.C. 1998. "CVD and PVD Transition Metal Nitrides as Diffusion Barriers for Cu Metallization." <i>IEEE</i> . pp. 243-246.
	Tagami, M., A. Furuya, T. Onodera, and Y. Hayashi. 1999. "Layered Ta-nitrides (LTN) Barrier Film by Power Swing Sputtering (PSS) Technique for MOCVD-Cu Damascene Interconnects." <i>IEEE</i> . pp. 635-638.
	Yamagishi, H., Z. Tokei, G.P. Beyer, R. Donaton, H. Bender, T. Nogami, and K. Maex. 2000. "TEM/SEM Investigation and Electrical Evaluation of a Bottomless I-PVD TA(N) Barrier in Dual Damascene" (Abstract). <i>Advanced Metallization Conference 2000</i> . San Diego, CA.
	Eisenbraun, Eric, Oscar van der Straten, Yu Zhu, Katharine Dovidenko, and Alain Kaloyeros. 2001. "Atomic Layer Deposition (ALD) of Tantalum-Based Materials for Zero Thickness Copper Barrier Applications" (Abstract). <i>IEEE</i> . pp. 207-209.
	Smith, S.R., K.E. Elers, T. Jacobs, V. Blaschke, and K. Pfeifer. 2001. "Physical and Electrical Characterization of ALD Tin Used as a Copper Diffusion Barrier in 0.25 $\mu$ m, Dual Damascene Backend Structures" (Abstract). <i>Advanced Metallization Conference 2001</i> . Montreal, Quebec.
	Kim, Y.T. and H. Sim. 2002. "Characteristics of Pulse Plasma Enhanced Atomic Layer Deposition of Tungsten Nitride Diffusion Barrier for Copper Interconnect" (Abstract). <i>IEIC Technical Report</i> . Vol. 102, No. 178, pp. 115-118.
	Elers, Kai-Erik, Ville Saanila, Pekka J. Soininen, Wei-Min Li, Juhana T. Kostamo, Suvi Haukka, Jyrki Juhanaja, and Wim F.A. Besling. 2002. "Diffusion Barrier Deposition on a Copper Surface by Atomic Layer Deposition" (Abstract). <i>Advanced Materials</i> . Vol. 14, No. 13-14, pp. 149-153.
	Peng, C.H., C.H. Hsieh, C.L. Huang, J.C. Lin, M.H. Tsai, M.W. Lin, C.L. Chang, Winston S. Shue, and M.S. Liang. 2002. "A 90nm Generation Copper Dual Damascene Technology with ALD TaN Barrier." <i>IEEE</i> . pp. 603-606.
	Van der Straten, O., Y. Zhu, E. Eisenbraun, and A. Kaloyeros. 2002. "Thermal and Electrical Barrier Performance Testing of Ultrathin Atomic Layer Deposition Tantalum-Based Materials for Nanoscale Copper Metallization." <i>IEEE</i> . pp. 188-190.
	Wu, Z.C., Y.C. Lu, C.C. Chiang, M.C. Chen, B.T. Chen, G.J. Wang, Y.T. Chen, J.L. Huang, S.M. Jang, and M.S. Liang. 2002. "Advanced Metal Barrier Free Cu Damascene Interconnects with PECVD Silicon Carbide Barriers for 90/65-nm BEOL Technology." <i>IEEE</i> . pp. 595-598.
	July 25, 2003. International Search Report for PCT/US02/24858.
V	March 30, 2004. Written Opinion for PCT/US02/19062.
BR	April 9, 2004. Written Opinion for PCT/US02/19116.

EXAMINER

DATE CONSIDERED

11/09/04

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.



SHEET 5 OF 5

INFORMATION DISCLOSURE  
CITATION IN AN  
APPLICATION  
(PTO-1449)ATTY. DOCKET NO.  
005917 USA/FET/FETSERIAL NO.  
09/998,372APPLICANT  
Young Joseph PAIKFILING DATE  
November 30, 2001GROUP  
3723

## OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

BB April 28, 2004. Written Opinion for PCT/US02/19117.

May 5, 2004. Office Action for U.S. Serial No. 09/943,955, filed August 31, 2001.

May 5, 2004. International Preliminary Examination Report for PCT/US01/27406.

May 28, 2004. Office Action for U.S. Serial No. 09/943,383, filed August 31, 2001.

June 3, 2004. Office Action for U.S. Serial No. 09/928,474, filed August 14, 2001.

June 23, 2004. Office Action for U.S. Serial No. 10/686,589, filed October 17, 2003.

June 30, 2004. Office Action for U.S. Serial No. 09/800,980, filed March 8, 2001.

GB July 12, 2004. Office Action for U.S. Serial No. 10/173,108, filed June 8, 2002.

EXAMINER

DATE CONSIDERED

11/09/04

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.